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Harvest 2013: Another Set of Extremes

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Integrated Crop Management NEWS

Harvest 2013: Another Set of Extremes

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This sounds like a broken record, but we are looking at yet another harvest driven by weather extremes and combinations that are hard to predict. The major events were the extremely late planting in very wet soils, followed by an almost complete turnaround in many places to a steadily growing drought condition. In July, the market believed that our major harvest risk would be very wet and late crops vulnerable to even an average frost. By Sept. 1, protracted heat changed the picture completely to the point where corn harvesting has begun in several markets. The quality and management forecast now differs sharply between corn and soybeans.

Corn

The recent extension of 90+ temperatures with inadequate rainfall has rapidly increased maturity of corn regardless of planting date. This demonstrates the principle that timing of events is at least as important as the average conditions. On average this year was “average” temperature and rainfall. However, corn quality is driven by conditions during grain fill. Kernels are small and shallow; the extent of kernel fill will be variable depending on timing of rains. Last year drought-stressed plants put unexpectedly large amounts of dry matter into kernels, resulting in the highest test weights and protein contents in many years. Areas that had enough rainfall to continue root development in June and July may experience the same result, but shallower rooted plants likely will have reduced fill and, therefore, lower test weights.

Test weight is one of two reliable indicators of storability, the other being the variation in moisture at harvest. Moisture variation will be an issue this year; even within the same planting date, there are large differences in maturity within fields or even the same rows. If there are large areas of replants, harvesting around them is a good option, but within fields there is little choice but to harvest straight through, which creates challenges for drying and handling. Recognize that early harvest will happen in warm weather. Rapid drying and cooling will be critical to preserving the storage life of 2013 corn. Actions in the first few days after harvest can either preserve or waste the future storage life of grain.

Soybeans

Soybeans are small but will probably be dry, except those planted quite late (June and after). Late-planted soybeans may still have some frost risk, especially in areas that received enough rain in August and early September to slow down the maturing process. Growth in the late season will mean harvesting with green stems and mixed quality. We will have more information on frost impacts and handling of frost damage if this problem occurs.

Harvest planning and preparation

Scout fields for fungal infections. Until the very recent hot weather, fungus and related mycotoxin problems seemed unlikely. However, deteriorating conditions and repeated small rains may encourage field fungi. It is important to understand which fungus can produce which toxin. There is a video tutorial on mycotoxins on the Iowa Grain Quality Initiative website.

Scouting for ear rots

Fields should be scouted for ear rots from black layer development onward. (See Figure 1.) At several locations in a field, peel back the husks of several ears and examine the ear for signs and symptoms of ear rot. Take note of what ear rot is present. If more than 10 percent of the ears in the field have ear rot, the field should be scheduled for harvest as soon as possible. This is particularly important in the case of ear rots that are associated with mycotoxin production (Aspergillus, Fusarium and Gibberella). Wet weather after maturity while the grain is drying down may increase the risk of toxin production by favoring growth of the fungus.

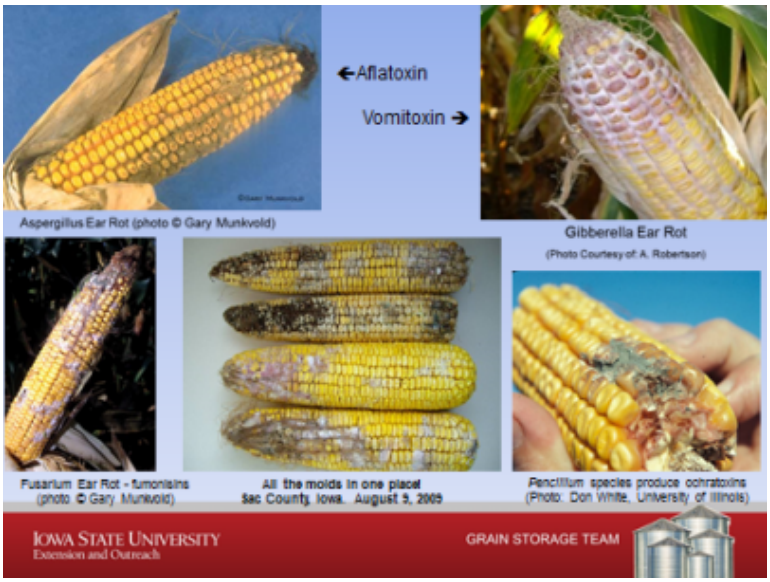


Figure 1.

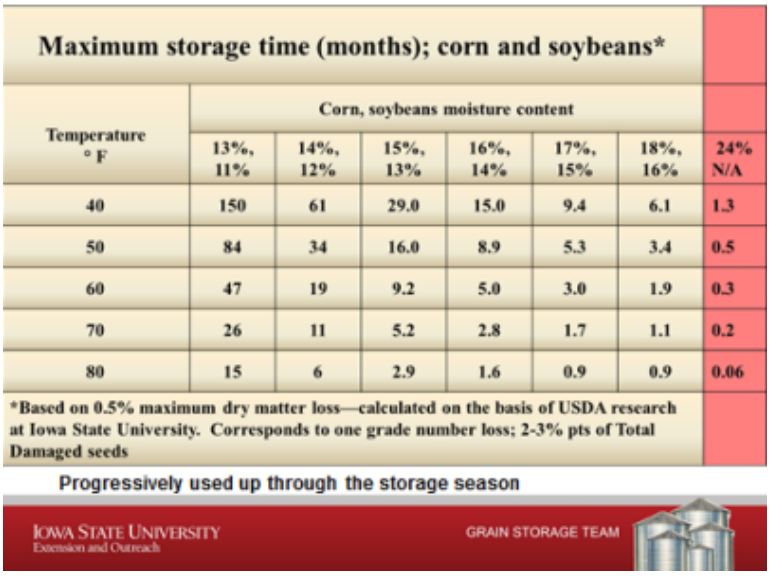
Grain management

Following basic principles of grain management will be important; the high variability in quality will not leave much room for error.

- Immediate cooling after harvest (and drying) - shelf life begins right away.
- Have adequate aeration (0.1 cfm/bu or more) - all bins with all grains should be aerated.
- Run a cooling cycle every 10-15 degree average change in outside temperature, starting at harvest. With 0.1 cfm/bu, a cooling cycle will take about 150 hours; proportionately less for higher airflows.
- Get grain below 40F as quickly as possible.
- Take out the center core of fines. Variable quality and lower test weight will mean more fines.
- Inspect grain and monitor temperature weekly until December; every two weeks thereafter. Automated temperature cable systems are very useful; the larger the bin the less likely a manual check will be adequate.
- Responding to temperature change is as important as the actual

temperature. A 3 to 5 degree change between readings, even if from 40 to 45 F, is indicative of spoilage if the fan had not been run in the interim.

- Stay within temperature-moisture guidelines. These are listed below. (See Figure 2.)



Maximum storage time (months); corn and soybeans*

Temperature ° F	Corn, soybeans moisture content						
	13%, 11%	14%, 12%	15%, 13%	16%, 14%	17%, 15%	18%, 16%	24% N/A
40	150	61	29.0	15.0	9.4	6.1	1.3
50	84	34	16.0	8.9	5.3	3.4	0.5
60	47	19	9.2	5.0	3.0	1.9	0.3
70	26	11	5.2	2.8	1.7	1.1	0.2
80	15	6	2.9	1.6	0.9	0.9	0.06

*Based on 0.5% maximum dry matter loss—calculated on the basis of USDA research at Iowa State University. Corresponds to one grade number loss; 2-3% pts of Total Damaged seeds

Progressively used up through the storage season

Figure 2.

Operating suggestions

- Recalibrate your yield monitor.
  – Seed size and density are factors in yield monitor response.
- Take more than one moisture sample any time moisture is being measured.
  – Average of at least three separate samples
- Check dryer moisture often (out and in)
  – This applies especially to continuous flow and automated batch dryers.
- Check accuracy on freshly dried grain.
  – Freshly dried grain normally reads low; test 5 to 10 sealed samples 4 to 6 hours later to establish a rough correction factor.
- Keep good records on what grain where.
  – Tracking of wet grain can indicate where problems could occur later.
  – Insurance records often need traceability by unit.
- Separate by test weight.
  – Check each new field as you open it.
  – Sell light grain first and grain that clearly had large moisture variations.
  – The yield monitor moisture will give a good indication of high variability.
- Expect hot spots in storages.
  – No dryer can completely even out wide moisture variances.
  – February and March will be the most likely time that problems will arise.
  – Good temperature systems are needed to detect hot spots deep in large bins.
- If you have late planted corn in spots, drive around them and come back later.
  – Moisture will be higher and test weight will be lower.
- Take out the center core of fines in all bins.
  – Variable quality and lower test weight will mean more fines.
  – Fines disrupt and restrict airflow.

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